

CLAIMS

We claim:

- 5 1. A polymer composition comprising a blend
of a first biodegradable polymer grafted with a polar monomer,
oligomer, or polymer or a combination thereof and a second
biodegradable polymer grafted with a polar monomer,
oligomer, or polymer or a combination thereof, wherein said
10 first and second biodegradable polymers are different polymers.
2. The composition of Claim 1, wherein said
first biodegradable polymer comprises about 1% to 99% by
weight of said polymer blend and second biodegradable
15 polymer comprises about 1% to 99% by weight of said
polymer blend.
3. The composition of Claim 1, wherein said
first biodegradable polymer comprises a polylactide.
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4. The composition of Claim 1, wherein said
first biodegradable polymer comprises a poly(ethylene oxide).
5. The composition of Claim 1, wherein said
25 second biodegradable polymer comprises a poly(hydroxy
alkanoate).
6. The composition of Claim 4, wherein said
poly(hydroxy alkanoate) is poly(β -hydroxybutyrate-co- β -
30 hydroxyvalerate).

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7. The polymer composition of Claim 1, wherein said polar monomer is an ethylenically unsaturated monomer containing at least one polar functional group or said oligomer or said polymer is an oligomer or a polymer polymerized from an ethylenically unsaturated monomer containing at least one polar functional group.

8. The polymer composition of Claim 6, wherein said at least one polar functional group is a hydroxyl, carboxyl, sulfonate, halide, glycidyl, cyano, carbonyl, thiol, sulfonic groups or a combination thereof.

9. The polymer composition of Claim 6, wherein said at least one polar functional group is a hydroxyl group.

10. The polymer composition of Claim 1, wherein said polar monomer is a polar vinyl monomer.

11. The polymer composition of Claim 1, wherein said polar monomer is selected from poly(ethylene glycol) acrylate, poly(ethylene glycol) alkyl ether acrylate, poly(ethylene glycol) methacrylate, poly(ethylene glycol) alkyl ether methacrylate, acrylic acid, maleic anhydride, itaconic acid, sodium acrylate, 3-hydroxypropyl methacrylate, 2-hydroxyethyl methacrylate, 3-hydroxypropyl acrylate, 2-hydroxyethyl acrylate, acrylamide, 2-bromoethyl methacrylate, 2-chloroethyl methacrylate, 2-iodoethyl methacrylate, 2-bromoethyl acrylate, 2-chloroethyl acrylate, 2-iodoethyl acrylate, glycidyl methacrylate, 2-acrylate, 2-cyanoethyl acrylate, glycidyl acrylate, 4-nitrophenyl acrylate, pentabromophenyl acrylate, poly(propylene glycol) methacrylate, poly(propylene glycol) acrylate, 2-propene-1-sulfonic acid and its sodium salt, 2-sulfoethyl acrylate, 2-

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sulfoethyl methacrylate, 3-sulfopropyl acrylate, 3-sulfopropyl methacrylate or mixtures thereof.

5 12. The polymer composition of Claim 1, wherein said polar monomer, oligomer, or polymer is selected from 2-hydroxyethyl methacrylate, polyethylene glycol methacrylate or analogs thereof.

10 13. The polymer composition of Claim 1, wherein said polar monomer, oligomer, or polymer is selected from hydroxyalkyl acrylate or hydroxyalkyl methacrylate.

15 14. The polymer composition of Claim 10, wherein said polar vinyl monomer is hydroxyalkyl acrylate or hydroxyalkyl methacrylate .

20 15. The polymer composition of Claim 10, wherein said polar vinyl monomer is 2-hydroxyethyl methacrylate or its analogs.

25 16. A polymer composition comprising a blend of a polylactide grafted with 2-hydroxyethyl methacrylate or its analogs and poly(β -hydroxybutyrate-co- β -hydroxyvalerate) grafted with 2-hydroxyethyl methacrylate or its analogs.

30 17. A polymer composition comprising a blend of a poly(ethylene oxide) grafted with 2-hydroxyethyl methacrylate or its analogs and poly(β -hydroxybutyrate-co- β -hydroxyvalerate) grafted with 2-hydroxyethyl methacrylate or its derivatives.

 18. A film comprising the composition of Claim 1.

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19. A fiber comprising the composition of Claim 1.

5 20. An article comprising the composition of Claim 1.

10 21. A polymer composition comprising a blend of two or more different biodegradable polymers grafted with polyethyleneglycol methacrylate or 2-hydroxyethyl methacrylate or their analogs.

22. A film comprising the composition of Claim 21.

15 23. A fiber comprising the composition of Claim 21.

20 24. An article comprising the composition of Claim 21.

25 25. The composition of Claim 1, wherein said composition has improved processability.

26 26. The composition of Claim 1, wherein said composition has improved mechanical properties.

27. The composition of Claim 1, wherein said composition has improved cooling properties and an increased solidification rate.

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